

What is claimed is:

- [0030] 1. In a cellular radio network having a plurality of base stations and a mobile switching center, a method for receiving and transmitting signals, the method comprising:
 - [0031] receiving a plurality of radio signals at different frequencies using a single radio receiver at said base station;
 - [0032] scanning said incoming signals and saving said signals to a buffer with a first processor;
 - [0033] reading, processing and time-multiplexing said buffered signals with a second processor;
 - [0034] transmitting said time-multiplexed radio signal via a single physical link to a mobile switching center;
 - [0035] demultiplexing said time-multiplexed radio signal into independent radio signals corresponding to said incoming signals at said mobile switching center with a third processor;
 - [0036] processing said independent radio signals with said third processor; and
 - [0037] routing said independent radio signals to the proper end users.
- [0038] 2. The method defined in claim 1, wherein said cellular radio network comprises a Frequency Division Multiple Access network.
- [0039] 3. The method defined in claim 1, wherein said cellular radio network comprises a Time Division Multiple Access network.
- [0040] 4. The method defined in claim 1, wherein said cellular radio network comprises a Global System for Mobile Communications.

[0041] 5. The method defined in claim 1, wherein said cellular radio network comprises a Code Division Multiple Access network.

[0042] 6. A system for receiving and transmitting cellular radio signals in a cellular radio network, the system comprising:

[0043] a radio receiver at a base station for receiving a plurality of radio signals at different frequencies;

[0044] a first processor for scanning said incoming signals and saving said signals to a buffer;

[0045] a second processor for reading, processing and time-multiplexing said buffered signals;

[0046] means for transmitting said time-multiplexed radio signal via a single physical link to a mobile switching center;

[0047] a third processor for demultiplexing said time-multiplexed radio signal into independent radio signals corresponding to said incoming signals at said mobile switching center and processing said independent radio signals; and

[0048] means for routing said independent radio signals to the proper end users.

[0049] 7. The system defined in claim 6, wherein said cellular radio network comprises a Frequency Division Multiple Access network.

[0050] 8. The system defined in claim 6, wherein said cellular radio network comprises a Time Division Multiple Access network.

[0051] 9. The system defined in claim 6, wherein said cellular radio network comprises a Global System for Mobile Communications network.

[0052] 10. The system defined in claim 6, wherein said cellular radio network comprises a Code Division Multiple Access network.